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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

MAILED

Application Number: 09/407,544
Filing Date: September 28, 1999
Appellant(s): CWIAKALA ET AL.

FEB 1 3 2007

Technology Center 2100

Kevin P. Radigan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/31/2004 appealing from the Office action

mailed 5/27/2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,301,323   MAEURER et al   4-1994

6,434,637   D'ERRICO   8-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A.   Claims 43, 45, and 47 are rejected under 35 U.S.C. 102(b) as being

anticipated by Maeurer et al. [US 5,301,323].

As to claim 43, Maeurer et al teach a method of managing input/output (I/O)

configurations of a computing environment, said method comprising:

selecting [col. 7, lines 34-39; col. 7, lines 65-67; col. 9, lines 28-35, col. 10, lines

8-15] a channel path from a plurality of channel paths to be used in adjusting an I/O

configuration of said computing environment, said selecting being based on a plurality

of characteristics ["varying system workload" in col. 3, lines 49-50; "some set of

priorities, e.g., workload goals or system performance" in col. 3, lines 55-56]; and

dynamically adjusting said I/O configuration using the selected channel path [col.

3, lines 47-65; col. 10, lines 41-43; CHANGE I-III of TABLE 1 in the bottom of col. 9-10].

As to claim 45, Maeurer et al teach said selecting is further based on at least

one of an impact on response time to achieve specific workload goals, contention on a

subsystem of said I/O configuration, availability [col. 4, line 68-col. 4, line 2; col. 9, lines

28-35] characteristics of said channel path, and complexity of the resulting I/O

configuration.

As to claim 47, Maeurer et al teach moving the selected channel path from one

port to another port [col. 9, lines 36-41; col. 9, lines 50-53; table 1 in col. 10-col. 11].

B.   Claims 1-42, 44, and 46 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Maeurer et al. [US 5,301,323] in view of D'Errico, [US 6,434,637

B1].

As to claims 1, 14, 27, 28, and 44, Maeurer et al teach a method of managing

input/output (I/O) of a computing environment, said method comprising:

selecting a channel path from a plurality of channel paths to be used in adjusting

an I/O configuration of said computing environment, said selecting being based on a

plurality of characteristics ["varying system workload" in col. 3, lines 49-50; "some set of

priorities, e.g., workload goals or system performance" in col. 3, lines 55-56]; and

dynamically adjusting said I/O configuration using the selected channel path [col.

3, lines 47-65; col. 10, line 41-col. 11, line 52; CHANGE I-III of TABLE 1 in the bottom of

col. 9-10].

Though Maeurer et al teach the selection of a channel path from a plurality of

channel paths, which are resided between a processor and a plurality of I/O controllers

[fig. 1] for servicing I/O workloads, is based on the plurality of characteristics including a

utilization of a channel path [col. 8, lines 20-22], Maeurer et al do not explicitly disclose

the plurality of characteristics further include at least in part of an I/O velocity resulting

from selecting the channel path.

D'Errico teaches [col. 14, lines 42-65] a selection of a channel path from a

plurality of channel paths, which are resided between a processor and a plurality of I/O

controllers [fig. 1] for servicing I/O workloads, is based on a channel path utilization [col.

14, lines 42-65] including at least in part of an I/O velocity ["average response times for particular path" in col. 14, lines 63-65] resulting from selecting the channel path.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Maeurer et al and D'Errico because they both teach a selection of a channel path from a plurality of channel paths based on a path utilization for distributing workload and the D'Errico's teaching of the path utilization further including at least in part of an I/O velocity resulting from selecting the channel path would increase accuracy [D'Errico: col. 4, lines 47-52] in reflecting a unit measure of bandwidth utilization of Maeurer et al.

As to claims 2, 15, and 29, Maeurer et al teach attaching the selected channel path to a subsystem of said I/O configuration [see table 1 in col. 10-col. 11].

As to claims 3, 16, and 30, Maeurer et al teach said selected channel path and said subsystem are associated with a workload executing within at least one logical partition of said computing environment [col. 1, lines 24-31], and the dynamically adjusting provides additional resources [col. 2, lines 59-62; table 1 in col. 10-col. 11] to said workload.

As to claims 4, 17, and 31, Maeurer et al teach said selected channel path was removed from another workload executing within at least one logical partition, thereby reducing resources of said another workload [table 1 in col. 10-col. 11].

As to claims 5, 18, and 32, Maeurer et al teach removing attachment of the selected channel path from a subsystem of said I/O configuration [table 1 in col. 10-col. 11].

As to claims 6, 19, and 33, Maeurer et al teach said selecting is further based on at least one of an impact on response time to achieve specific workload goals, contention on a subsystem of said I/O configuration, availability [col. 4, line 68-col. 4, line 2; col. 9, lines 28-35] characteristics of said channel path, and complexity of the resulting I/O configuration.

As to claims 7, 20, and 34, Maeurer et al teach determining that said I/O configuration is to be adjusted [col. 7, lines 3-4; table 1 in col. 10-col. 11].

As to claims 8, 21, and 35, Maeurer et al teach determining comprises using one or more workload goals in making the determination [col. 7, lines 65-67].

As to claims 9, 22, and 36, Maeurer et al teach the one or more workload goals are associated with workloads of a group of partitions of said computing environment [col. 1, lines 24-31; col. 2, lines 50-52].

As to claims 10, 23, and 37, Maeurer et al teach determining comprises consulting with one or mere workload managers of said computing environment in making the determination [col. 4, lines 37-41].

As to claims 11, 24, and 38, Maeurer et al teach determining comprises using measured subsystem performance being within an average target range [col. 10, lines 54-58].

As to claims 12, 25, and 39, Maeurer et al teach projecting an impact of the adjustment on one or more subsystems to be effected by the adjustment, prior to said dynamically adjusting [col. 9, lines 22-26; col. 9, lines 41-45; col. 9, line 60-col. 10, line 2].

As to claims 13, 26, and 40, Maeurer et al teach dynamically adjusting when the impact is acceptable [col. 9, lines 41-45; col. 9, line 60-col. 10, line 2].

As to claim 41, Maeurer et al teach said plurality of channel paths include one or more channel paths that can be added and one or more channel paths that can be deleted [col. 10, lines 41-43], D'Errico teaches the selecting comprises choosing the channel path from the plurality of channel paths which satisfies a best option, the best option taking into consideration the I/O velocity resulting from selecting the channel path [col. 14, lines 63-65], and Maeurer et al teach the selecting concurrently [col. 9, lines 36-41; col. 9, lines 50-53; table 1 in col. 10-col. 11] takes into consideration the one or more channel paths that can be added and the one or more channel paths that can be deleted.

As to claim 42, Maeurer et al teach moving the selected channel path from one port to another port [see the path P0 is moved from CU 1 to CU 4 in TABLE 1 in col. 10-col. 11].

As to claim 46, Maeurer et al teach said plurality of channel paths include one or more channel paths that can be added and one or more channel paths that can be deleted [col. 10, lines 41-43], D'Errico teaches the selecting comprises choosing the

channel path from the plurality of channel paths which satisfies a best option [col. 14,

lines 63-65], and Maeurer et al teach the selecting concurrently [col. 9, lines 36-41; col.

9, lines 50-53; table 1 in col. 10-col. 11] takes into consideration the one or more

channel paths that can be added and the one or more channel paths that can be

deleted [e.g., TABLE 1 of col. 10-col.11 shows the path P0 is added to CU 4 and the

path P0 is deleted from CU1]. And see above for the *rationale*.

(10) Response to Argument

The Examiner summarizes the various points raised by the Appellants and

addresses replies individually.

a.   *The Appellants allege that D'Errico is not directed to adjusting or changing an I/O*

configuration; stating for example, D'Errico does not change the configuration by adding

or deleting paths. The I/O configuration of D'Errico stays the same. [pages 7 and 9 of

Appeal Brief].

The examiner disagrees. Maeurer teaches adjusting or changing an I/O

configuration by path assignment for distributing a workload. Furthermore, D'Errico also

teaches adjusting or changing an I/O configuration by path assignment [e.g., two paths

A and B are alternatively assigned to the I/O operations instead of using all four A-D

paths in col. 10, lines 19-29 and col. 2, lines 18-22]. Thus, this limitation is clearly met

by both Maeurer and D'Errico.

b.   *The Appellants allege that D'Errico's utilization of average response times is quite different from the use of I/O velocity in the present invention [page 8 of Appeal Brief].*

In response, the examiner directs the Board's attention to page 48, lines 3-20 of the instant Specification where Appellants discuss this feature of the claimed invention:

> In accordance with yet another aspect of the present invention, the I/O configuration (e.g., the channel path configuration) of a computing environment can be dynamically changed in order to move available channel resource to where it is needed or to remove excess channel resource, without human intervention. This reduces the skills required for configuring I/O, enhances overall system availability, maximizes utilization of installed channels and uses the relative priorities of workloads to distribute available I/O·capacity. In one embodiment, one or more factors are looked at before making a change, in order to determine the "best" change to make. These factors include, for example, <u>the impact to the response time, or I/O velocity</u>; the impact to the response time to achieve specific workload goals; the destination port being busy; the resulting availability characteristics (e.g., add paths with no single points of failure in common); and the resulting complexity (or entropy) of the I/O configuration.

D'Errico is believed to meet this definition in that the utilization of average response times for particular paths is read in the use of I/O velocity.

c.   *The Appellants allege that Maeurer does <u>not concurrently</u> consider both the add and delete possibilities. Maeurer and D'Errico, either alone or in combination, not teach moving the selected channel path from one port to another port [page 9 of Appeal Brief].*

The examiner respectfully points out that the claims do not require concurrent consideration of both the add or delete possibilities. Maeurer, even if the feature were claimed, teaches that the selecting takes into consideration the one or more channel paths that can be added and the one or more channel paths that can be deleted and thus does concurrently consider both options [e.g., TABLE 1 of col. 10-col.11 shows path P0 is added to CU 4 and the path P0 is deleted from CU1].

d.   *The Appellants allege that Maeurer and D'Errico, either alone or in combination, not teach moving the selected channel path from one port to another port [pages 10-11 of Appeal Brief].*

The examiner disagrees. Maeurer teaches moving the selected channel path from one port to another port [see the path P0 is moved from CU 1 to CU 4 in TABLE 1 in col. 10-col. 11].

e.   *The Appellants allege that the selection of the channel path in Maeurer is based solely on channel utilization, i.e., one characteristic not a plurality of characteristics [page 11 of Appeal Brief].*

For this point, Maeurer teaches that the selection of channel path is based on a plurality of characteristics including at least a plurality of channel utilizations [col. 9, lines 33-35 and col. 9, lines 36-41] and workload goals [col. 9, lines 8-10; col. 10, lines 8-33].
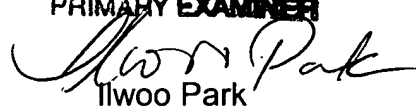
(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.
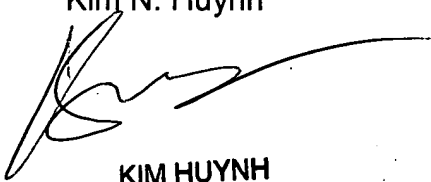
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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PRIMARY EXAMINER

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